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CLAIMS

1. An image forming apparatus that forms an image on a recording medium, comprising:
 - 5 a carriage having a recording head to form the image by scanning the recording medium; and
 - a detector provided in said carriage so as to detect a leading edge of said recording medium.
- 10 2. The image forming apparatus as claimed in claim 1, further comprising an analog processing circuit that transmits an output signal of said detector.
- 15 3. The image forming apparatus as claimed in claim 1, further comprising a digital processing circuit that transmits an output signal of said detector.
- 20 4. The image forming apparatus as claimed in claim 1, wherein said detector is located at a position where said recording medium is detectable on an upstream side of an image formation start position by said recording head in a direction of conveyance of said recording medium, and also located on a side of an image forming area when said carriage is located at a home
25 position.

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5. An image forming apparatus that forms an image on a recording medium, comprising:

a carriage having a recording head to form the image by scanning the recording medium; and

5 a detector provided in said carriage so as to detect a width of said recording medium in a direction of scanning.

6. The image forming apparatus as claimed in
10 claim 5, further comprising an analog processing circuit that transmits an output signal of said detector.

7. The image forming apparatus as claimed in
15 claim 5, further comprising a digital processing circuit that transmits an output signal of said detector.

8. The image forming apparatus as claimed in
claim 5, wherein said detector detects the width of said
recording medium only when scanning is performed first.

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9. The image forming apparatus as claimed in
claim 5, wherein said detector is located at a position
where said recording medium is detectable on an upstream
side of an image formation start position by said
25 recording head in a direction of conveyance of said

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recording medium, and also located on a side of an image forming area when said carriage is located at a home position.

5 10. An image forming apparatus that forms an image on a recording medium, comprising:

 a carriage having a recording head to form the image by scanning the recording medium; and

 a state detector that detects a state of an
10 interior of said carriage or a state of an area surrounding said carriage, said state detector being mounted on said carriage.

 11. The image forming apparatus as claimed in
15 claim 10, wherein said state detector comprises an optical sensor having a light-emitting element emitting a light and a light-receiving element receiving the light emitted from said light-emitting element.

20 12. The image forming apparatus as claimed in claim 11, wherein said light-emitting element and said light-receiving element are integrated with each other.

 13. The image forming apparatus as claimed in
25 claim 10, further comprising a conveyance belt that

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conveys the recording medium.

14. The image forming apparatus as claimed in claim 13, further comprising a control part that
5 determines whether said conveyance belt is dirty in accordance with a result of detection of said state detector.

15. The image forming apparatus as claimed in
10 claim 11, wherein said state detector comprises an infrared light sensor.

16. The image forming apparatus as claimed in claim 10, wherein said state sensor comprises a
15 temperature sensor that detects a temperature of an area surrounding said carriage.

17. The image forming apparatus as claimed in claim 16, further comprising:
20 a conveyance belt that conveys the recording medium;

a drive roller that drives said conveyance belt; and

a control part that corrects an amount of
25 rotation of said drive roller in accordance with a

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result of detection of said state detector.

18. The image forming apparatus as claimed in claim 16, further comprising a control part that changes a drive waveform applied to said recording head in accordance a result of detection of said state detector.

19. The image forming apparatus as claimed in claim 16, further comprising: a drive part that drives said carriage; and
10 a control part that changes a drive waveform applied to said drive part in accordance with a result of detection of said state detector.

20. An image forming apparatus that forms an
15 image on a recording medium, comprising:
a carriage having a recording head to form the image by scanning the recording medium; and
a state detector including an optical sensor that is mounted on said carriage so as to detect a state
20 of an area surrounding said carriage.

21. The image forming apparatus as claimed in claim 20, wherein said state detector determines a kind of the recording medium in accordance with a result of
25 detection of said optical sensor.

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22. The image forming apparatus as claimed in claim 21, wherein the kind of the recording medium is determined in accordance with an analog output level of said optical sensor.

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23. The image forming apparatus as claimed in claim 21, further comprising a conveyance member that conveys the recording medium by attaching the recording medium to a predetermined area of said a surface of said conveyance member, and wherein said state detector
10 detects a state of the surface of said conveyance member.

24. The image forming apparatus as claimed in claim 23, wherein said conveyance member is an endless conveyance belt.
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25. The image forming apparatus as claimed in claim 24, wherein said state detector detects blot on said conveyance belt in accordance with a result of
20 detection of said optical sensor.

26. The image forming apparatus as claimed in claim 24, wherein said state detector detects damage on said conveyance belt in accordance with a result of
25 detection of said optical sensor.

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27. The image forming apparatus as claimed in claim 21, wherein component parts other than a conveyance part, which is present within a detectable area of said state detector so as to convey the recording medium, have color density levels different from a color density level of the recording medium being conveyed by the conveyance part.

28. The image forming apparatus as claimed in claim 27, wherein the color density levels of the component parts other than said conveyance part are different from a color density level of said conveyance part.

29. An image forming apparatus that forms an image on a recording medium, comprising:
a carriage having a recording head to form the image by scanning the recording medium;
an optical sensor that is mounted on said carriage; and
component parts other than a conveyance part, which is present within a detectable area of said optical sensor so as to convey the recording medium, having color density levels different from a color density level of the recording medium being conveyed by

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the conveyance part.

30. The image forming apparatus as claimed in claim 29, wherein the color density levels of the component parts other than said conveyance part are different from a color density level of said conveyance part.

31. An image forming apparatus comprising:
10 a carriage having a recording head that ejects droplets of liquid onto a recording medium for forming an image on the recording medium; and
a state detector that detects presence of the recording medium along a moving line of said carriage,
15 wherein when moving said carriage in a main-scanning direction to perform a printing operation, a part of the printing operation is cancelled after said state detector detects non-presence of the recording medium.

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32. The image forming apparatus as claimed in claim 31, wherein said state detector is provided on an upstream side of said carriage in the main-scanning direction so as to cancel the part of the printing
25 operation in the main-scanning direction after a

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position where non-presence of the recording medium is detected by said state detector in an initial scanning of said carriage for printing.

5 33. The image forming apparatus as claimed in claim 31, wherein said state detector is provided on an upstream side of said carriage in the main-scanning direction so as to cancel the part of the printing operation in the main-scanning direction while detecting
10 a position the recording medium is not present for each main-scanning of said carriage for printing.

 34. The image forming apparatus as claimed in claim 31, wherein a plurality of heads are provided in
15 the recording head so as to eject droplets in a plurality of colors by being arranged in the main-scanning direction, and the main-scanning of said carriage is continued after non-presence of the recording medium is detected by said state detector so
20 as to cancel a printing operation of each of the heads step-by-step while moving the carriage in the main-scanning direction.

 35. The image forming apparatus as claimed in
25 claim 34, wherein an amount of movement of said carriage

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in the main-scanning direction and cancellation of the printing operations of the heads step-by-step are controlled, after the non-presence of the recording paper is detected, in accordance with information
5 regarding an adjustment value of intervals between the heads.

36. The image forming apparatus as claimed in claim 31, wherein a plurality of nozzle trains are
10 provided in the recording head so as to eject droplets in a plurality of colors by being arranged in the main-scanning direction, and the main-scanning of said carriage is continued after non-presence of the recording medium is detected by said state detector so
15 as to cancel a printing operation of each of the nozzle trains step-by-step while moving the carriage in the main-scanning direction.

37. The image forming apparatus as claimed in
20 claim 31, wherein said carriage is movable bidirectionally so as to perform bidirectional printing, and, when a part of the printing operation in one direction is cancelled, a part of the printing operation corresponding to an area where the printing operation is
25 cancelled in the one direction is also cancelled in the

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printing operation in the other direction.

38. The image forming apparatus as claimed in claim 31, wherein said carriage is movable
5 bidirectionally so as to perform bidirectional printing, and, said state detector is provided on each side of said carriage in the main-scanning direction.

39. The image forming apparatus as claimed in
10 claim 31, wherein said state detector is provided on an upstream side of said carriage in a feed direction of the recording medium, and the printing operation is started after said state detector detects an edge of the recording medium while scanning said carriage in the
15 main-scanning direction, and said state detector detects the edge of the recording medium for each min-scanning of said carriage so as to determine a position of the edge of the recording medium used in the printing operation of a subsequent line.

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40. The image forming apparatus as claimed in claim 39, wherein a plurality of heads are provided in the recording head so as to eject droplets in a plurality of colors by being arranged in the main-
25 scanning direction, and the main-scanning of said

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carriage is continued beyond the edge of the recording medium detected by said state detector so as to cancel the printing operation of the heads step-by-step.'

5 41. The image forming apparatus as claimed in claim 40, wherein an amount of movement of said carriage in the main-scanning direction and cancellation of the printing operations of the heads step-by-step are controlled, after each of said heads passes the edge of
10 the recording medium, in accordance with information regarding an adjustment value of intervals between the heads.

 42. The image forming apparatus as claimed in
15 claim 39, wherein a plurality of nozzle trains are provided in the recording head so as to eject droplets in a plurality of colors by being arranged in the main-scanning direction, and the main-scanning of said carriage is continued beyond the edge of the recording
20 medium detected by said state detector so as to cancel the printing operation of the nozzle trains step-by-step.

 43. The image forming apparatus as claimed in claim 39, wherein said state detector is provided at a
25 position corresponding to the nozzle train closest to an

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edge off said recording head in the main-scanning direction.

44. The image forming apparatus as claimed in
5 claimed 31, further comprising a conveyance belt that conveys the recording medium by electrostatically attracting the recording medium onto a surface of the conveyance belt.